

THE PIPELINE

Proposed Changes to Plan Reviews

Budget cuts, incomplete submissions, affect turn-around time

By Lee Boushon

Budget cuts are fast becoming an all too familiar and constant occurrence. In order to continue focus on core plan review activities we need to evaluate ways to reduce time and costs associated with the overall process.

Currently the Public Water Systems Section processes about 1100 approvals each year. There are roughly 4.5 staff to manage the review, filing, mailing, and record storage associated with this process. While the complexity of the projects (ozone, air stripping, membrane filtration, anion exchange nitrate removal) and the variety of issues to be dealt with (impacts to surface water, wetlands, chlorides, endangered species, loan eligibility) have increased dramatically, our technical staffing has not changed significantly since 1983. In the same time frame, our support staff has been dramatically reduced.

In an effort to streamline the plan review process, the following options are being discussed:

1. Not returning plans and specifications. We have already stopped doing this for water mains with a significant reduction in handling time and postage costs.
2. Mailing a single copy of the approval letter. With some approvals we can make up to 8 copies of the letter to cover all interested parties.
3. Creating additional checklists. The ones we have significantly reduce review time.
4. Returning incomplete plans. We see many projects that are not accompanied by any description or engineering report. Additionally, at times, we see projects that are submitted piecemeal in order to have the review process start while the design engineer completes the project or collects the additional supporting information necessary to complete our review. While these approaches may reduce the time for the engineering firm ultimately they require increased staff time from us contacting the designer and requesting information. This is time that we would prefer to have available to discuss complex projects during the design phase. We've found through experience that working through problems and questions prior to the final design reduces our time and meets the needs of communities and project engineers.
5. Electronic submittals and approvals. Before this can occur, the legalities of electronic signature and authorization must be settled. Additionally this may add cost to our record storage depending on the format of the submittals.

We've touched on these topics before. Now however, we will be implementing one or more of the above options to trim our budget. If you have any additional suggestions or thoughts let us know. Talk with your Regional DNR Engineer or contact Lee Boushon, (608) 266-0857, lee.boushon@dnr.state.wi.us.

Plan Submittal Forms Can Save Time

Many are available on DNR Web site

By Lee Boushon

While completing plan submittal forms seems to take additional time, it greatly reduces that number of questions our plan reviewers have and ultimately results in a much quicker turn-around. It also gives a more thorough understanding of the project by our reviewers, and a more complete understanding of the requirements by the engineers preparing the projects.

Filling out the correct forms for well pumps, chemical feed equipment, and water mains will replace the requirement in NR 811.13 (3) to include an engineering report for all projects. Thus, forms must be completed with all requests for approval of these facilities. You should also be aware that we are considering additional forms related to other facilities.

Plan submittal forms for well pumps, chemical feed equipment, and water mains are available on the Web. Currently, you can print out copies of the forms from Drinking Water & Groundwater Pages of the DNR Web site at www.dnr.state.us/. In the future the forms will be modified to allow information to be submitted on line.

We do periodically revise our forms so if you have comments on how to make the forms more useable or understandable please let us know. If you have a suggestion or question, please contact Lee Boushon at (608) 266-0857 or lee.boushon@dnr.state.wi.us.

Let's Talk About Variances Up Front

Your request for approval must spell these out

By Lee Boushon

On occasion we receive requests for approval to use treatment technologies, materials, or processes that are not addressed by NR 811. Similarly there are occasions where it is not practical to comply with the requirements of NR 811. In either of these instances it is possible to obtain a variance to the requirements contained in NR 811. The procedures for requesting approval are outlined in NR 811.03(1). For some activities, such as locating a well less than 200 feet from a sanitary sewer or locating a water main less than 8 feet from a sanitary sewer in areas of high bedrock, specific requirements are provided in NR 811. For most

others the applicant must develop and justify the design requirements in order to obtain the variance.

Some cautionary notes on variances:

1. You must request a variance. If a design requirement of NR 811 will not be met you must indicate the deviation from the code and specifically request a variance. If a variance is not requested and the plans are approved you may be requested to correct the deviation at the start up inspection.
2. Do not automatically assume that because you request a variance one will be granted. If it is practical to comply with the requirements of NR 811 you will be required to comply. A common example is requesting less than 8 feet of separation between a water main and sanitary sewer because of lack of space. If there is sufficient room on the other side of the roadway you will be required to comply with the separation distances. If the code can be met by locating the sanitary and storm on the same side of the roadway instead of the storm and water main as designed you will be required to modify your design.
3. You must support the request for variance by demonstrating it is impractical to comply with NR 811 and supporting why your proposal provides adequate protection of public health. Simply stating a variance is requested is not sufficient.
4. You should allow extra time for review of projects that include variance requests. In most cases a review of the variance is a collaborative effort and coordinating discussions among staff and the project engineer along with reviewing the additional information takes additional time.
5. If you thought you were requesting a variance and it isn't included in the approval letter you did not receive one. Our approval letters should clearly state what sections of the administrative code the variance and the rationale for granting a variance are addressing.
6. Don't assume that once you've had a variance granted for a specific process or design feature that we would always accept the process or feature. Variances are issued on a case by case basis. If we become familiar enough with a given process or feature we will modify the administrative code. In the interim we will inform you of our policy to routinely accept the process or feature until code changes can be made. In some cases, based on additional information, we may decide not to allow the features or processes to be incorporated into future designs.
7. **Sanitary sewer variances for the fast-track approval.** As part of the sanitary sewer review there are times when a sewer is proposed less than 200 feet from a municipal well. In these cases the wastewater plan review engineer contacts the drinking water systems plan review engineer to confirm a variance should be granted. You need to provide the following information:

- What is the well number?
- What is the well construction?
- What is the sanitary sewer material?
- What is the leakage testing method?
- What is the maximum separation distance possible?
- Why do you think the lesser separation distance is adequate to protect the well from contamination?

This information should be provided in a letter that can be forwarded to the drinking water plan review engineer. Please allow additional time for the review. While the sewer is a "fast track" variance requests are not and are placed in the normal workload of the drinking water engineer. Based on current staffing we have between 30 and 60 days of backlog that should be taken into account.

NR 811 Revision Suggested

What are Your Thoughts?

By Lee Boushon

The last major rewrite of NR 811 was completed in May of 1992. Since that time a number of minor revisions have been made and a section on Aquifer Storage and Recovery systems was created. Through the years a number of issues have been identified as needing additional clarification or modification, well abandonment as an example.

Prior to beginning the revision we'd like to have some idea on your opinion of the need for revision and on how we could improve the usefulness of the Code. One concept that has been discussed is splitting the Code into operation and maintenance requirements and design requirements. Another has been to separate out requirements for municipal systems and those for other than municipal system. Send me your thoughts by E-mail to lee.boushon@dnr.state.wi.us. Sometime this winter we'll try to look at the responses and our workload to determine the best way to proceed.

Reservoir Vents and Aerator Intakes

Screens and Covers Minimize Potential Contamination

By Norman Hahn

Drinking Water and Groundwater Staff with the DNR recommend that water system owners and their consultants give additional consideration to providing enhanced protection when designing vent and aerator openings, screens and covers. During the plan review process it is common to have an initially proposed design of the vent or aerator that would not provide adequate protection to minimize the entrance of bugs, bird droppings, wind blown debris, and other contaminants. A little additional effort in this area can bring big rewards in providing increased security and minimizing the potential for contamination of the water supply from intentional or accidental occurrences.

In accordance with NR811, reservoir and tank vents and aerator openings must terminate in a “U” bend or be provided with a protective mushroom cap. Additionally, some reservoir vents and aerator openings are protected with louvered openings and hoods. The code language states that the openings shall be protected from insects, birds, wind-borne debris or dust, surface water, rain and snow. Appropriately sized non-corrodible screens shall be installed at locations accessible for maintenance and inspection but yet inaccessible from unauthorized personnel.

The Department recommends that the following items be considered when designing water system improvements that include reservoir or tank vents and aerator openings.

1. Provide security fencing and motion detectors where appropriate.
2. Make sure that facilities are frequently inspected, including remote or hard to access installations. Inspections should be made daily at minimum.
3. Attempt to install vents, intakes and overflows in directions and locations that are least accessible to unauthorized personnel.
4. Install protective hoods/caps that completely cover openings and screens when viewing the installations from the side. Not only does this help prevent the entrance of contaminants introduced from natural forces but this should help minimize contaminants if thrown at the openings.

If you have any questions on this topic, please contact Norman Hahn, norman.hahnjr@dnr.state.wi.us or call at (608) 267-7661.

Treatment Equipment Installation at a Community Water System

Answers to some common questions

By Frank Fuja

Drinking Water & Groundwater staff would like to remind designers, contractors, and treatment system suppliers of the NR 109 plan submittal requirements and NR 811 treatment code requirements for a community water system. The following guidance will help answer some questions with respect to the installation of treatment at an existing or proposed community water system, that is using or will be using groundwater as a source.

What are the Code requirements involving the installation of treatment at a community water system? As provided in the definition section of Wis. Adm. Code NR 108, a “reviewable project” includes any water supply facilities that will be constructed for a new community water system. The definition includes, “Any improvements, extensions or alterations which affect the quality or quantity of water delivered by an existing community water system...” Based upon this definition, the installation of any equipment that treats all of the water being supplied to a community water system is considered to be a reviewable project.

What Code section contains the requirements for treatment at community water system? The treatment requirements for a community water system can be found in Subchapter VIII of Wisconsin Adm. Code NR 811. Subchapter VIII includes requirements for treatment that is typically installed at a community water system (such as disinfection, sequestration, aeration/(iron) filtration, and softening). Subchapter VIII also contains requirements for treatment to remove substances exceeding the NR 809 maximum contaminant levels (including organics removal and radionuclide removal).

With respect to potential treatment of water from a proposed well source, what information might be available about raw water quality or environmental contaminants? Depending upon the aquifer being used and the location of nearby wells, it may be reasonable to review raw water quality being obtained from other wells. Water quality and well construction information from other community water systems may be available by logging into the Department's water public water supply database at <http://www.dnr.state.wi.us/org/water/dwg/DWS.htm>

Environmental contaminants are also a possible concern with respect to treating water from a proposed well. A designer or contractor may be able to obtain useful information regarding nearby environmental contamination sites from the following two websites:

WDNR - GIS Registry of Closed Remediation Sites
<http://gomapout.dnr.state.wi.us/org/at/et/geo/gwur/index.htm>

WDNR Bureau of Remediation & Redevelopment Tracking System on the Web
<http://www.dnr.state.wi.us/org/aw/rr/brrts/index.htm>

How can the raw water laboratory results be used to develop treatment requirements or treatment alternatives?

Once the results are available, review the data to determine if any of the established NR 809 maximum contaminant levels have been exceeded. If a maximum contaminant level is exceeded, staff assigned to the Bureau of Drinking Water & Groundwater shall be contacted to determine if treatment is an option, or if an alternate water source will be required.

Next, review the raw water data with respect to acceptable (aesthetic) water quality standards and alternative treatment options. [For example: With respect to total dissolved iron in the raw water, a concentration of 0.3 ppm may not require any treatment. If the concentration is between 0.3 ppm and 1.0 ppm, the installation of a sequestration chemical feed equipment might be considered. If the concentration exceeds 1.0 ppm, the installation of an oxidation/filtration system should be considered.]

With respect to some proposed community water systems (such as apartment, condominium, or mobile home developments), raw water laboratory results are frequently not available at the time of the water system design. What should be done in this situation? The best approach is to wait until the raw water laboratory results are available before completing the water system design. Alternatively, a design that allows for the future installation of treatment equipment should be considered. When designing the layout of the well discharge piping and pressure tank piping, consider the installation of the following items; 1) injection taps for disinfection and/or sequestration chemical feed pump systems; 2) piping/valve connections for treatment devices; and 3) sufficient space in the pump room or mechanical room for the treatment equipment (potentially including chemical feed systems, aeration/iron filtration systems, water softener systems, or other types of treatment equipment).

What must be submitted to the Department for the installation of treatment equipment at a community water system? If all of the water serving a community system will be treated, three sets of plans and specifications for the treatment system shall be submitted for Department approval prior to its installation. An engineering report and the raw water laboratory results shall also be submitted. A complete list of submittal requirements for different types of treatment projects can be found at the following website:

<http://www.dnr.state.wi.us/org/water/dwg/plrev/planrev1h.htm>

Prior to the development of the plans and specifications and engineering report, it may be beneficial to review the proposed project with the regional plan review engineer assigned by the Bureau of Drinking Water & Groundwater. The regional plan review engineers are assigned as follows:

Region	Plan Review Engineer	Contact Information
Northeast/ West Central	Kris Khatri	PH 920-492-5906 Fax: 920-492-5913 Email: kris.khatri@dnr.state.wi.us
Northern/ South Central	Norm Hahn	PH 608-267-7661 Fax: 608-267-7650 Email: norman.hahn@dnr.state.wi.us
Southeast	Francis Fuja	PH: 414-263-8749 Fax: 414-263-8749 Email: francis.fuja@dnr.state.wi.us

Scrubbers Required for New Chlorine Gas Installations

By Larry Landsness

As of July 1, 2002, the Wisconsin Department of Commerce adopted a new commercial building code. The Wisconsin Enrolled Commercial Building Code applies to new buildings and alterations to existing buildings, but not existing buildings where no alterations are proposed. The International Fire Code is adopted for design and construction requirements as referenced in Comm 61.03(13) including provisions that apply to the storage of chlorine and ammonia gas. The DCOM code applies to all utility type buildings including pump houses, whether they require DCOM review or not. DCOM review is required for buildings over 25,000 cubic feet.

The International Fire Code requires that highly toxic compressed gases, such as chlorine and ammonia, be located in an enclosed space such as a gas-tight room and the room be provided with exhaust ventilation with a treatment system. Scrubbers are considered a treatment system for the exhaust ventilation. During our plan review of new or modified facilities, we will be checking to see if scrubbers are proposed. If not, we will refer it on to the regional DCOM building inspection staff.

For additional information contact Bill Sullivan of the Department of Commerce at (608)266-9643.

Arsenic in Groundwater

Compliance deadline set

By Norm Hahn

The USEPA has set a deadline of January 23, 2006, for community water systems to comply with the new drinking water arsenic standard of 10 ug/l (ppb). WI DNR will be enforcing this deadline. The DNR is currently in the process of adopting the new standard into Chapter NR 809, Wis. Adm. Code. The previous arsenic drinking water standard was 50 ug/l. Entry point compliance will be necessary. USEPA indicates that inorganic arsenic is a known carcinogen and that long-term ingestion can increase the risk of skin cancer and tumors of the bladder, liver, kidney and lungs. Groundwater is usually higher than surface water in arsenic content because the arsenic is transferred from the rock containing the arsenic to the groundwater passing by. Arsenic can be present in two forms in groundwater, arsenic III (arsenite) and arsenic V (arsenate). Depending on the arsenic removal method employed it may be necessary to oxidize and convert all of the arsenic III to arsenic V so that it can be effectively removed.

Effective arsenic removal methods are still being researched. Cost-effective methods currently appear to include oxidation and filtration along with iron and/or manganese and adsorption on to a throwaway media such as GFH (granular

ferric hydroxide). Other processes that may effectively remove arsenic but have other hindering treatment, disposal, operational or cost considerations include ion exchange, reverse osmosis, electrodialysis reversal, adsorption on to activated alumina, coagulation/filtration and lime softening. Arsenic disposal in wastewater, sludges and adsorptive medias to be landfilled when spent are not expected to be a problem for most systems.

Underwater Tank Inspections

Requirements to protect public health

By Larry Landsness

There has been an increased interest in conducting underwater inspections of water storage tanks and reservoirs. This is an acceptable method of conducting routine interior inspections and cleaning in most instances. The following list of requirements for underwater tank inspections in Wisconsin is based on AWWA Standard C652-02.

1. Underwater inspections should only be conducted on reservoirs where repairs or significant maintenance are not expected.
2. Although not mandatory, the tank should be isolated from the potable system during the inspection. The Department does not recommend on-line reservoir inspections. Unanticipated demands on the water system during on-line inspections could pose serious dangers to the divers. Also, unplanned contamination to the reservoir by the inspection team could occur and pose a health threat to the customers. The tank should remain off-line for a minimum of 15 minutes after the last diver leaves the tank.
3. A minimum free chlorine residual of 0.5 mg/l must be maintained in the tank throughout the entire inspection. Samples must be taken from the tank (not the sample tap on the riser pipe) before entering the tank and upon leaving the tank to assure the minimum chlorine residual level of 0.5 mg/l is maintained. If sediment is removed from the tank, chlorine residuals from the tank must be taken every four hours during the inspection.
4. All divers must be certified commercial divers having passed an ACDE approved course or 1st or 2nd class US Navy Diver training or equal.
5. All divers must be provided with commercial grade diving equipment.
6. All divers must use totally encapsulated diving dress including dry suit and full face sealed mask with sealed neck dam.
7. The diver's equipment must include voice communications with the surface and umbilical.

8. The inspection team must consist of a minimum of three people including at least two certified commercial divers.
9. All equipment introduced into the water must be dedicated for potable water use and must be disinfected with a minimum 200 ppm chlorine residual prior to entry.
10. The dive team must provide still photographs or color video with live voice recording to monitor all activities, findings and actions.
11. No underwater welding or coating repair is allowed.
12. A minimum of two safe bacti samples be obtained from the tank after the inspection, one following the inspection and one 24 hours later. The tank may be in service during the 24-hour period, whether the tank has been isolated or not.
13. All personnel on the dive team must be free of communicable diseases and shall not, without a physician's consent to return to diving activity, have been under a physician's care within the seven day period prior to entering the facility. No person who knowingly has an abnormal temperature or symptoms of illness shall work in a water storage facility. The water utility operator has the right to request a physician's assurance (based on an examination within the 48-hour period immediately prior to the time the diver enters the water storage facility) that all inspection personnel are free of water-transferable communicable diseases.
14. The regional DNR engineer must be informed of the date of the inspection.

If you have questions on underwater inspections, please contact your regional DNR engineer or Larry Landsness, larry.landsness@dnr.state.wi.us, (608) 267-7647.

Baffled by Bacteria in Baffle Walls

Wood and concrete block not a good choice for baffle walls.

By Norman Hahn

Neither wood nor concrete blocks with porous surfaces will be approved for the construction of baffle walls within ground storage reservoirs. It has been the experience of some public water system operators and DNR drinking water staff that the pores can harbor bacteria which are very difficult if not impossible, to eliminate. Even concrete blocks with special coatings may eventually cause problems because it is the nature of the coatings to fail over time.

Recommended materials for the construction of baffle walls includes poured concrete, smooth sided block and NSF 61 certified plastic sheeting held in place by stainless steel fittings.

If you have any questions on this topic, please contact Norman Hahn, norman.hahnjr@dnr.state.wi.us or call at (608) 267-7661.

Siting of Wells Near Wetlands & Surface Waters

Addressing Community Concerns

By Lee Boushon

A cautionary note and words of explanation on issues that are coming up during the siting of new wells. Because of citizen concerns expressed over the lack of consideration of impacts to surface waters and wetlands during the approval of high capacity wells we have been requesting that communities consider potential impacts to these areas when developing plans for a new well. This is not a requirement, however, we've found in most cases that by preparing ahead of time for questions and selecting sites that eliminate or minimize impacts we have been able to address the concerns.

When well sites are selected we forward the information to our field staff to allow for comments. If concerns are raised about potential impacts you may be asked to collect additional information during test well construction and pumping to determine potential impacts. Our intent is not to prevent the construction of wells based on impacts to surface water or wetlands but to balance the need for additional drinking water with protection of the resources. Additional time should be allowed for our review and approval if you know or suspect that the proposed well will have an impact.

Well Abandonment Update

Seeking Your Input

By Norm Hahn

The Private Water Systems Section is currently in the process of revising the private water system well code, NR 812. The Drinking Water (Public) Systems Section is planning on revising the community water system well code, NR 811, in the near future.

Tom Riewe (608-266-8697) of the Private Water Systems Section and Norm Hahn (608-267-7661) of the Drinking Water Systems Section will be working together to simplify requirements and to make the well abandonment requirements of both sections as similar as possible.

Your input and suggestions on appropriate well abandonment materials and methods would be appreciated. Please forward your comments to Tom or Norm.

A Pump or Motor Needs to be Replaced?

When is written approval needed?

By Norm Hahn

If a pump and/or motor must be replaced for any reason, Department approval is not required if the old equipment is being replaced with identical equipment (producing the same approximate gallon per minute output) even if the manufacturer is different.

Prior written approval of the Department is required if the proposed pump or motor modifications will result in a modified gallon per minute production output (either more or less), a vertical turbine pump will be switched to a submersible pump or vice-versa, an oil lubricated vertical turbine pump will be switched to water lubrication, a variable frequency drive unit will be installed, the auxiliary power installation is to be modified or some how the water quality will be effected. A completed Well Pump Submittal Checklist (DNR Form No. 3300-226) must be submitted to the Department for review and approval in those cases where prior Department written plan approval is required.

A Note about Environmental Reviews for Loan Program

By Jim Witthuhn

DNR staff are now required to perform environmental reviews for all Safe Drinking Water Loan Program (SDWLP) funded projects. These reviews will assess the impacts of the funded project on archaeological, historic, and endangered resources in the area. To help facilitate the review process, loan applicants may be asked to provide some basic information necessary for the Department to complete the review.

If you have any questions, please call Jim Witthuhn at (608) 267-9659.

State Revolving Loan Fund

Is there money available for your system?

By Jim Witthuhn

Since the beginning of the State Drinking Water Loan Program (SDWLP), there have been some years in which not all the funds available were used. This program provides low interest loans to publicly-owned community water systems. Most of the time this has occurred as a result of the following:

- High-priority scoring projects did not complete the funding process,
- High-priority scoring projects found other funding sources, or
- There were not enough loan applicants to use the available funds.

This past year (SFY 2003), the latter was the case. Even in these hard economic times, we did not have enough loan applicants to use the funds that were available.

Many types of projects, from new treatment plant/wells to main replacements and storage tank and well rehabs, are loan eligible. And as history has taught us, just because a project has a lower priority score does not automatically mean it will not get funding. Like I have told many people, I can guarantee you only one thing: if you do not apply, you will not get money from the SDWLP. If you do apply, who knows?

If you have any general or technical (engineering requirements, deadlines) questions, please call Jim Witthuhn at (608) 267-9659. If you have any questions about the financial requirements, please call Dan Olson at (608) 267-9638. And don't forget to apply next year!

Onsite Disinfectant Note

NSF Approval for Salt

By Larry Landsness

We are seeing an increased interest in onsite generation of chlorine and sodium hypochlorite. These involve an electrochlorination process requiring salt. The salt used must be NSF 60 certified. Also, if the use of disinfection is mandatory for disinfection, redundant equipment will be required.

If you have any questions on this please contact Larry Landsness, larry.landsness@dnr.state.wi.us, or call at (608) 267-7647.

Discharge of Highly Chlorinated Water

By Lee Boushon

As part of the normal operation of water systems, chlorination is used as a method to ensure the bacteriological safety of the water provided to customers. Doses of chlorine vary based on the intended use from the low residuals carried in the distribution systems to high doses used for disinfection of wells, new mains, and reservoirs. Even the low doses carried in distribution systems can be toxic to fish and other aquatic biota.

It's extremely important to ensure that chlorinated water is not being discharged to surface waters. These types of discharges are covered by the WPDES permit system. Details on permit requirements and an application form can be found at <http://www.dnr.state.wi.us/org/water/wm/ww/gpindex/gpinfo.htm>. The discharge permit for disinfection of water supply facilities is Hydrostatic Test Water and Water Supply System Water WI-0057681-3. You should be aware that if you discharge chlorine in excess of the permit limitations you could be subject to enforcement action and fines.

Proper Chemical Feed Injection Locations & Wiring

Quick reminders for installation and maintenance

By Norm Hahn

Remember that chemical injection taps installed into a horizontal pipe need to be installed up into the bottom half of the pipe so that the injection nozzle projects upward. This is required for fluorosilicic acid chemical feed installations by s. NR811.46 (3)(e), Wis. Adm. Code, but is applicable for all chemicals, many of which are chemically aggressive.

Having the nozzle pointed upward will minimize the amount of chemical that will be able to drip out of the end of the injection nozzle when the chemical feed pump shuts off. Chemical that drips out will fall by gravity through the still water to the bottom of the pipe where it can corrode through the pipe lining and pipe wall over time. Staff have received reports of this happening.

All chemical injection taps should be made with corporation stops and injection nozzles to facilitate easy removal and replacement of the injection nozzle.

Corporation stops and injectors should be constructed of metal unless the use of plastic is warranted in individual cases where corrosion may be a concern due to the chemical being fed.

Section NR811.46 (4) requires a secondary means of controlling the on-off operation of the fluoride chemical feed pump as a means of preventing overfeeds of fluoride. Fluoride can be harmful at higher concentrations. It is recommended that a secondary means of control be installed for all chemical feed systems, especially if this control is already available due to an existing fluoride chemical feed installation.

A secondary means of control normally consists of

- a flow switch,
- a pressure switch, or
- a limit switch on a check valve

These should be installed on the well pump discharge piping and wired in series so that both the motor starter and the switch will be activated before the chemical feed pump can operate.

If you have any questions on this topic please contact Norman Hahn, norman.hahnjr@dnr.state.wi.us or call at (608) 267-7661.

Antenna Installations on Water Towers?

Communication Equipment and Water Supply

By Becky Olson

Special thanks to Norm Hahn and Larry Landsness, for providing the information in this article.

The rapid growth of the cell phone business has resulted in the increased use of water towers or elevated tanks for mounting cellular antennas and other communication equipment. This has provided considerable revenues for some utilities, and can work out well for cellular providers and community members. However, security and maintenance advisors with the DNR Drinking Water Systems Section urge you to consider the full cost of this arrangement before installation takes place.

Structural Integrity

Water system operators should ask for assurances that the function of the water tower will not be affected in the long term. In some cases, structural damage to the water tower can occur if the antenna frames are not properly attached and reinforced. Coating damage can occur from the antenna frame welds both inside and outside of the tank. Cable routing can limit access to hatches, ladders and vents and can also cause complications for repainting or other maintenance. In addition, if antennae cables are not installed with the water tower's primary function in mind, tank openings may be altered or left open thus creating the potential for contamination.

Security Concerns

Installing any communication equipment on your water tower means that workers unassociated with the water supply may at times be working on the top of the tank. At a minimum, locks keyed differently than the pedestal access door should be installed for the manholes that allow direct access into the wetted portion of the tank. (Locks are always required for the pedestal access door.) At no time should the communication equipment maintenance workers be given keys to your facilities.

If you would like more information on this topic, contact your regional public water system engineer.

Sidebar to Above Article

Public Water System Security Basics

DNR drinking water supply specialists have asked local public water suppliers to visually inspect their systems **daily**. Water system security measures are an important way for communities of any size to protect public health."

Every public water system should already have a standard emergency operation plan in place, and when the time comes don't hesitate to put it into action. A good plan will activate the emergency government system in an appropriate and timely manner; communicate vital information to local and federal law enforcement, public health and water supply specialists and most importantly, the people using the water.

Systems are also encouraged to perform a security analysis for their facilities and develop a detailed plan of action. All public water systems should follow these basic measures:

1. Secure access to all facilities.
2. Restrict public access to all facilities and work with local law enforcement on system security.
3. Inspect facilities daily and maintain a log.

For more information on improving drinking water system security contact Don Swailes, section chief, drinking water quality, at don.swailes@dnr.state.wi.us or (608) 266-7093.

Surface Water System Rule Update

Changes that have taken place during the last 18 months

By Larry Landsness

The Interim Enhanced Surface Water Treatment Rule (IESWTR) and the Stage 1 Disinfectants and Disinfection Byproducts Rule (Stage 1 DBPR) went into effect January 1, 2002.

The IESWTR, which applies to systems using surface water or groundwater under the direct influence of surface water and serve greater than 10,000 people, includes a MCL Goal of zero and requires a 2-log physical removal of cryptosporidium. Combined filter effluent turbidity performance standards have been reduced to less than or equal to 0.3 NTU in at least 95 percent of the measurements taken each month and a maximum level of 1.0 NTU. In addition, continuous turbidity monitoring on individual filters is required with measurements recorded every 15 minutes.

Stage 1 DBPR applies to all systems adding a disinfectant. The MCL for TTHM is now set at 0.080 mg/L and the MCL for HAA5 is now set at 0.060 mg/L, based on a running annual average of four samples per quarter. The rule also sets a bromate MCL of 0.01 mg/L for systems using ozone and a chlorite MCL of 1.0 mg/L for systems using chlorine dioxide. Maximum residual disinfectant levels (MRDL's) of 4.0 mg/L have been established for free chlorine and chloramines. Some systems are now subject to minimum TOC removal levels.

The Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) was published in final by US EPA on January 14, 2002. The rule is similar to the Interim Enhanced Surface Water Treatment Rule but applies systems that use surface water or groundwater under the direct influence of surface water and serve less than 10,000 people. Systems must be in compliance by January 14, 2005.

USEPA released a proposal for the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) in July 2003. It is expected that the rule will become final in mid 2004. This rule will take a system-specific approach to additional treatment based on the levels of *Cryptosporidium* found in the source water. All surface water systems serving more than 10,000 people would be required to conduct two years of monthly raw water *Cryptosporidium* sampling.

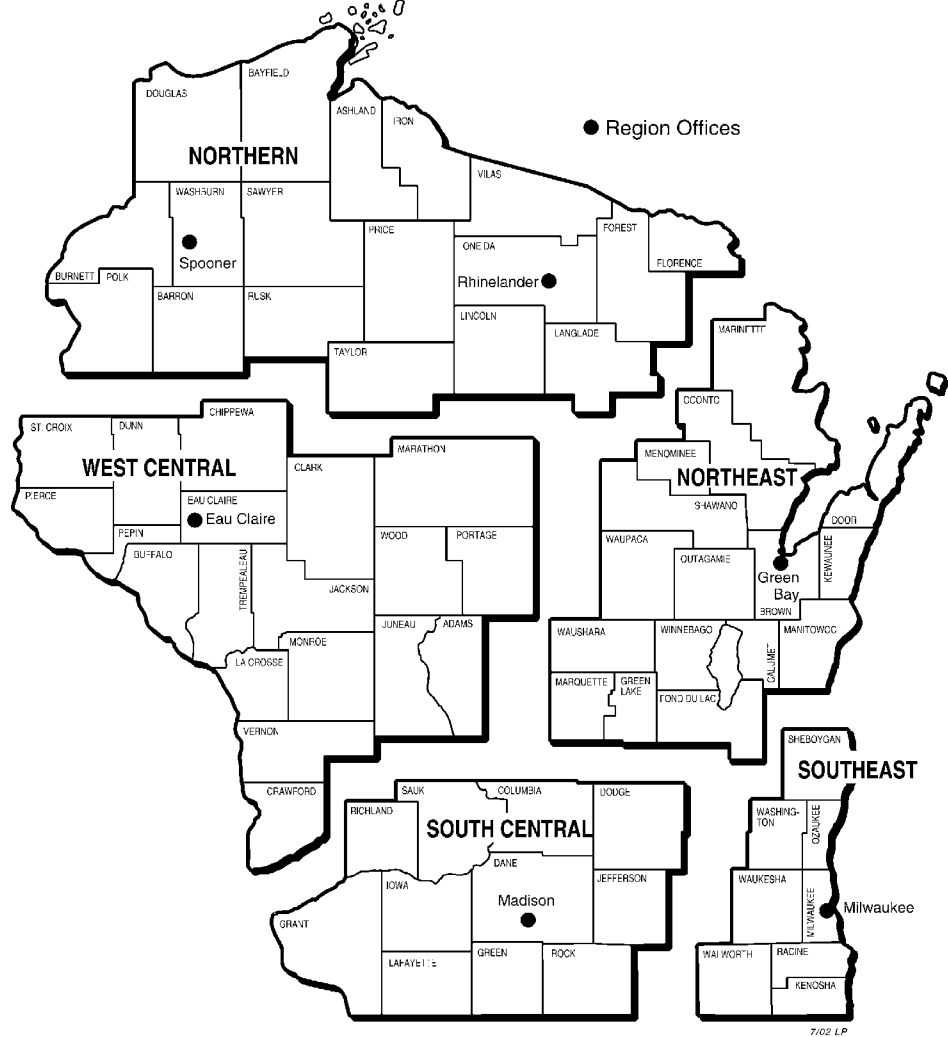
The average of the results for *Cryptosporidium* sampling will be used to place the system into one of four bins or categories. Each bin will specify the level of additional treatment above and beyond the IESWTR and LT1ESWTR. It is expected that most systems in compliance with the IESWTR or LT1ESWTR will not be required to implement additional treatment. The rule will include a microbial toolbox of processes and technologies for providing the additional treatment levels. These include membranes, ozone and UV. USEPA is presently developing design and implementation criteria for these technologies.

If you have questions during the interim, please contact Larry Landsness, larry.landsness@dnr.state.wi.us, (608) 267-7647.

The Wisconsin Department of Natural Resources provides equal opportunity in its employment, programs, services and functions under an Affirmative Action Plan. If you have any questions, please write to: Equal Opportunity Office, Department of the Interior, Washington, D.C. 20240.

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The DNR has five regional offices statewide to serve you. Talk to your drinking water & groundwater specialist at one of the DNR regional offices or visit the DNR web site at <http://www.dnr.state.wi.us>. Choose "Drinking Water & Groundwater" from the drop-down menu, and select from a variety of listed topics.



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